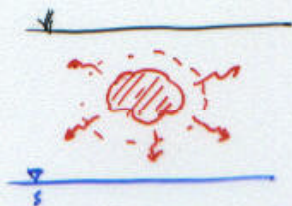
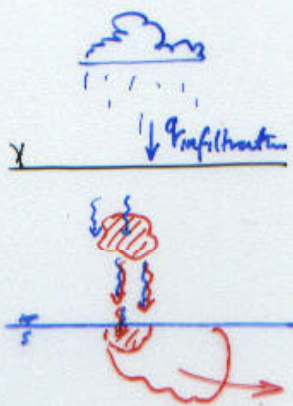


7.1 TRANSPORT MECHANISMS



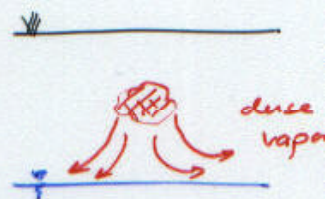
DIFFUSION

i.e. No infiltration of g/w (small)
No gas-phase advection



WATERBORNE ADVECTION

Caused by infiltration



GAS-PHASE ADVECTION

{ Density driven
Temperature driven



increasing complexity/reality

Each of these transport modes may be used
to define anticipated (approximate) behavior.

VOLATILIZATION

Henry's Law

- Assumes local equilibrium between concentrations in the air and concentration in other fluids. (i.e. water carrying dissolved NAPL)

$$P = H' C_w$$

H' = Henry's Law Constant
(atm. \cdot m³/mole)

C_w = Concentration in water

C_{wmax} = solubility

P = Partial pressure of NAPL in gas phase (atm)

Tendency to volatilize \uparrow with $\uparrow H'$ - See table Appendix A.

Raoult's Law

- Equilibrium between pure NAPL solution and air.

$$P_i = X_i P_i^\circ$$

P_i = vapor pressure of chemical i over the NAPL solution

X_i = mole fraction of compound i in NAPL solution

P_i° = vapor pressure of pure compound i

i.e. To determine "effective" vapor pressure of a "cocktail" of NAPL.